Ectopic deposition of laminins in human hepatocellular carcinoma tissues are associated with expression of laminin receptors

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Laminins are a diverse group of \( \alpha/\beta/\gamma \) heterotrimers formed from five \( \alpha \), three \( \beta \) and three \( \gamma \) chains; they are major components of all basal laminae (BLs). One laminin chain that has garnered particular interest due to its widespread expression pattern and importance during development is laminin \( \alpha5 \). Little is known, however, about the expression and function of laminins containing the \( \alpha5 \) chain in human hepatocellular carcinoma (HCC). Here, using a specific antibody, we examined the expression of laminin \( \alpha5 \) in HCCs.

In normal liver, although laminin \( \alpha5 \) was observed in hepatic BLs underlying blood vessels and bile ducts, it was absent from the parenchyma, which may be the origin of HCC. On the other hand, laminin \( \alpha5 \) deposition was observed throughout all HCCs, regardless of tumor grade. In well-differentiated HCCs, it localized along the trabeculae of the tumor. In poorly-differentiated HCCs, it was present in surrounding tumor nodules. In HCC cell lines, laminins \( \alpha5 \) heterotrimerized with \( \beta1 \) and \( \gamma1 \) chains and was secreted into the culture media. To attempt to understand the function of laminins containing \( \alpha5 \), the expression of its receptors in HCC was also determined. In relation to ectopic deposition of laminin \( \alpha5 \), lutheran/basal cell adhesion molecule (Lu/B-CAM), a specific receptor for the \( \alpha5 \) chain, was expressed by HCC cells. Finally, cell-adhesion assays showed that HCC cells readily attached to laminin containing the \( \alpha5 \) chain, more than did primary hepatocytes. These results suggest that laminins containing \( \alpha5 \) serve as functional substrates regulating progression of HCC.